

CLAIMS

What is claimed is:

1. An organic electronic device comprising a heat sink having a side with a roughened surface.
- 5 2. The organic electronic device of claim 1, wherein the heat sink is attached to an array within the organic electronic device.
3. The organic electronic device of claim 1, wherein the heat sink has a thickness no greater than 500 microns.
4. The organic electronic device of claim 1, wherein the ratio of
10 area:thickness is at least 500:1, when the area and thickness are expressed in units of mm² and mm, respectively.
5. The organic electronic device of claim 1, wherein the heat sink lies within 90 μm of an organic active layer of the organic electronic device.
- 15 6. The organic electronic device for claim 1, wherein the organic electronic device is designed to be at least one of an outdoor display and a lighting panel.
7. The organic electronic device of claim 1, wherein the side with the roughened surface has a black surface.
- 20 8. An organic electronic device comprising an array of organic electronic components, wherein the organic electronic device has a black surface.
9. The organic electronic device of claim 8, wherein the organic electronic device further comprises a heat sink attached to the array,
25 wherein the heat sink has the black surface.
10. The organic electronic device of claim 9, wherein the heat sink has a pattern on a side opposite a substrate, wherein the pattern extends at least partially through a thickness of the heat sink.
11. The organic electronic device of claim 9, wherein the heat sink
30 comprises islands.
12. The organic electronic device of claim 9, wherein the heat sink comprises a base portion and mesas extending from the base portion.
13. The organic electronic device of claim 9, further comprising an organic active layer, wherein the heat sink lies within 90 μm of the organic
35 active layer.
14. The organic electronic device of claim 8, wherein the organic electronic device is designed to operate at a power density of at least 100 mW/cm².

15. A process for forming of an organic electronic device comprising:

forming a patterned electrically conductive layer over a substrate, wherein the patterned electrically conductive layer comprises an

5 electrically conductive member; and

selectively spaced-apart members, wherein:

a heat sink comprises the spaced-apart members;

the spaced-apart members are spaced apart from each other;

and

10 the spaced-apart members are thermally coupled to the electrically conductive member.

16. The process of claim 15, further comprising placing a first stencil mask over the patterned electrically conductive layer before selectively forming the spaced-apart members, wherein the first stencil
15 mask has openings corresponding to shapes of the spaced-apart members.

17. The process of claim 16, further comprising placing a second stencil mask over the substrate before forming the patterned electrically conductive layer, wherein:

20 the second stencil mask has an opening corresponding to a shape of the electrically conductive member; and

selectively forming is performed by a method selected from the group consisting of vapor depositing, coating, casting, and printing.

18. The process of claim 15, wherein selectively forming comprises
25 plating an electrically conductive material.

19. The process of claim 18, further comprising forming a patterned insulating layer before selectively forming, wherein the patterned insulating layer has openings corresponding to locations where the second members will be formed during selectively forming.

20. A process for forming an organic electronic device comprising:
30 forming a first layer over a substrate;

forming a patterned resist layer over the first layer, wherein an exposed portion of the first layer underlies an opening within the patterned resist layer; and

35 etching at least partially through the exposed portion of the first layer,

wherein a heat sink comprises first layer.

21. The process of claim 20, wherein etching comprises wet etching.

22. The process of claim 20, wherein etching comprises dry etching.

5 23. A process of using an organic electronic device comprising a first electrically conductive member and a second electrically conductive member, wherein the method comprises:

 biasing the first electrically conductive member to a first potential;
and

10 biasing the second electrically conductive member to a second potential,

 wherein biasing the first electrically conductive member and biasing second electrically conductive member is performed so that the organic electronic device is operating at a power density of at least 100 mW/cm².

15 24. The process of claim 23, wherein the power density is no greater than 9 W/cm².

 25. The process of claim 23, wherein:

 the organic electronic device further comprises a heat sink;

20 the heat sink has a side with a pattern that extends at least partially through a thickness of the heat sink; and

 the side is opposite the first electrically conductive member.

 26. The process of claim 23, wherein the organic electronic device comprises at least one of an outdoor display and a lighting panel.